

# When Numbers Matter – An Analysis of Current and Future Availability of Nursing Workforce in South Africa

**Susan J Armstrong, D Cur.**

<https://orcid.org/0000-0002-2929-7376>

University of the Witwatersrand,

South Africa

[sue.armstrong@wits.ac.za](mailto:sue.armstrong@wits.ac.za)

**Catherine A Bell, MSc**

<https://orcid.org/0000-0001-8380-3631>

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## Abstract

### Introduction

Nurses are in short supply globally and South Africa is no exception. The situation has worsened recently with the introduction of new nursing education programmes without putting contingency plans in place to mitigate against the risks.

### Purpose/Aim

The purpose of this paper is to alert the profession to the impact the changes in nursing education has had on the availability of nurses of all categories, in the short and longer term, and to make recommendations for addressing the problem before the crisis leads to the longer-term collapse of the health care system.

### Methodology

The annual and time series statistics published by the South African Nursing Council were used to collect data up until the year 2022 which were the most recent statistics available on the website. Projections were based on the known data related to the age of nurses on the register, the number of accredited places at nursing education institutions, population data from Stats SA and the World Bank and other available information. These projections were based on certain assumptions detailed in the article.

### Results/Findings

South Africa already has insufficient nurses to meet the requirements for providing universal health coverage of 58,64 nurses per 10 000. Unless urgent

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steps are taken to increase nurse training, the country will be short of 260 458 nurses by the year 2030 and just over 400 000 nurses by the year 2054.

## Conclusion

Calculating training needs is complex and this article shows only the tip of the iceberg, but it is clear that it is imperative that all stakeholders who influence nursing education in South Africa come together to avert this crisis.

**Keywords:** nursing shortage; nursing programmes; changes in nursing education

## 1. Introduction

It is no secret that nursing education has undergone profound change in the last decade. Not only have the so-called legacy courses been phased out, but all nursing education institutions had to develop new curricula, and the majority of nursing education institutions have had to move into higher education. All this while the South African Nursing Council has been making the statistics relating to nursing and nursing education available to us, but this valuable data does not appear to have been used to guide policy development and support rational change.

An analysis of the data paints a depressing picture of current and future availability of nurses in South Africa. It is essential that policy makers and the profession at large take heed and act before the country wakes up with a crisis on their hands from which it will be impossible to recover. As Lewis Thomas is reported to have said, “Health care delivery systems are “held together, glued together, enabled to function ... by the nurses.” (Quoted by Wakefield et al, 2021).

Any change in the healthcare system will, according to systems theory, inevitably impact on the whole system, so the nursing manpower situation needs to be viewed with the understanding that the health system includes inputs, processes and outputs and all are dynamically inter-related (Meyer RM, O'Brien-Pallas LL. 2010) within the context of the dynamics of the country and the world. In this article these aspects are analysed through a nursing education lens.

## 2. Health Care Needs of the Country

As a starting point one needs to know how many nurses (and midwives) the country actually needs to offer quality health care. This is where our first problem arises. As far back as 2013, Uys and Kloppe (2013) referred to the Minister of Health's exhortation at the Nursing Summit of April 2011 for “nurses of South Africa” to determine ratios so that the workforce could be reliably planned. Despite some attempts to do this we are as yet uncertain what the ratios should be – a situation that is now further complicated by the introduction of the new category of General Nurse. In 2021, the “South Africa Workforce Planning” report on the work done by the Hospital Association of South

Africa (HASA & NDOH,2021) in collaboration with the National Department of Health and assisted by McKinsey & Company reported a shortfall of nurses based on their determination of the “demand” for nurses. This study was conducted prior to any changes in nursing education being felt.

The World Health Organisation (WHO) offers some guidance relating to the recommended ratios of nurse to population although they are careful not to be dictatorial. In order to attain the targets for universal health coverage recommended by the WHO, Ahmat et al (2022) calculated that the world would need a ratio of 58,64 per 10 000 population. Kharazmi, Bordbar & Bordbar (2023) estimated that in 2023 there was an average of 38.6 nurses per 10 000 population in the world and went further to state that high human development countries have an estimated ratio of 37.7 nurses per 10 000 population and low human development countries as low as 7 per 10 000. Currently South Africa (which is classified as a high development country) has a ratio of 44.84 per 10 000 (calculated from SANC annual stats for 2022).

As will be seen in Table 1, nurses are not evenly distributed throughout the country with the Northern Cape and Mpumalanga below the average ratio for high developed countries, and the province of Kwa Zulu Natal having considerably more than other provinces, even when looking at the number of professional nurses per population in that province. It is important to note that although KwaZulu comes close, none of our provinces attain the recommended targets for universal health coverage.

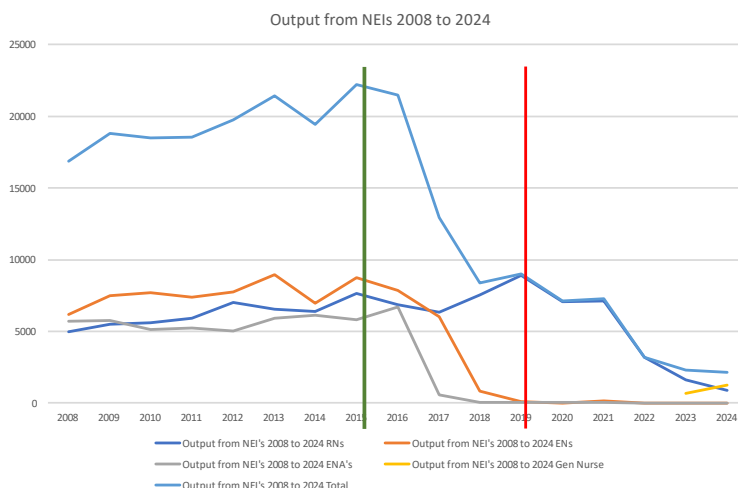
Table 1: Nurse to 10 000 population per province

	<b>Ratio PN:pop</b>	<b>Ratio EN:pop</b>	<b>Ratio ENA: Pop</b>	<b>All categories</b>
W Cape	25,64	7,31	9,47	42,37
E Cape	24,94	6,71	9,20	40,82
N Cape	18,18	2,51	6,42	27,1
FS	28,82	6,02	9,00	43,86
KZN	30,86	16,18	10,34	57,47
NW	26,32	6,06	9,63	42,02
Gauteng	25,97	8,06	9,91	43,86
Mpumalanga	19,38	4,06	7,75	31,25
Limpopo	23,04	7,38	16,01	46,51
Country	25,91	8,64	10,15	44,84

### 3. Changes in Nursing Education

Having established, although somewhat tenuously, the needs of the country for nurses, it is useful to analyse the numbers of students completing nursing programmes in the country before and after the changes in nursing education. The last intake for the two-year programme for pupil enrolled nursing (R2175) and the one-year programme for nursing auxiliaries (R2176) were phased out in 2015. The two-year programme for enrolled nurses “upgrading” to a professional nurse (R683), colloquially known as the bridging programme, together with the four-year programme (at both degree and diploma levels) (R425) for professional nurses, were phased out in 2019. This meant that by 2016 or thereabouts, the last group of nursing auxiliaries joined the workforce, and the last group of enrolled nurses joined in roughly 2017. The professional nurses who qualified via the bridging programme joined in 2020 or 2021 and the professional nurses who qualified via the four-year diploma or the degree programme joined in 2022 or 2023.

Figure 1 speaks for itself indicating the reduction in the output of nurses of all categories in the country. The figure also indicates that a new category of nurse, the general nurse – a three-year diploma (exiting at SAQA level 6) - was starting to emerge. This category is important as they have a scope of practice which is wider than that of an enrolled nurse and is closer, although not equivalent to, the previous scope of practice of a professional nurse.



**Figure 1:** Output from nursing education institutions from 2008 to 2024

Further analysis of the numbers relating specifically to the training of professional nurses at the height of the output of nurses from the nursing education institutions indicates another serious problem. Of all the nurses who followed a programme leading

to registration as a professional nurse, 57% followed the bridging programme and therefore have no midwifery qualification, 31% followed the four-year diploma programme and a mere 12% followed the degree programme. While professional nurses were being produced by the nursing colleges this was probably not a problem but thinking forward to the fact that the former nursing colleges (both private and public) are, with one notable exception, only training the new three-year diploma nurses and the nursing auxiliaries, there will be a serious shortage of professional nurses.

According to the Higher Education Act (No 101 of 1997), all higher education should be a national jurisdiction, but the provinces in South Africa remain responsible for nurse training in the public nursing colleges. This means there has been little, if any, coordination of the numbers and categories of nurses being trained for the country, which has led to additional issues of concern. Nursing education institutions are still in the process of trying to get programmes accredited, which is a lengthy process as two statutory bodies need to approve programmes – the SA Nursing Council and the Higher Education Qualifications Council. The data in Table 2 indicates the number of students on the various programmes that have been accredited for the nine provinces of South Africa.

**Table 2:** Number of training places accredited for training per province

<b>Province</b>	<b>Degree (Professional nurse)</b>	<b>Diploma (General nurse)</b>	<b>Higher Certificate (Auxiliary nurse)</b>
E Cape	185	276	520
Free State	75	120	140
Gauteng	290	580	0
KZN	185	250	0
Limpopo	140	410	115
Mpumalanga	0	70	0
N Cape	0	30	30
N West	160	90	100
W Cape	140	150	170
Total	1175	1976	1075

Whereas there seems to be some logic in concentrating on training the three-year diploma General nurse as they can work in all health establishments and the cadre needs to be grown from scratch. It should be born in mind that they cannot specialize until they have obtained a midwifery qualification under the current regulations of the SA Nursing Council and cannot be in charge of a health care establishment. As to how many professional nurses should be trained compared to the other two categories, this is one of the many unknowns in establishing the status of nursing manpower in the country. If one looks at the data in Table 2 it is difficult to understand why the Eastern Cape has

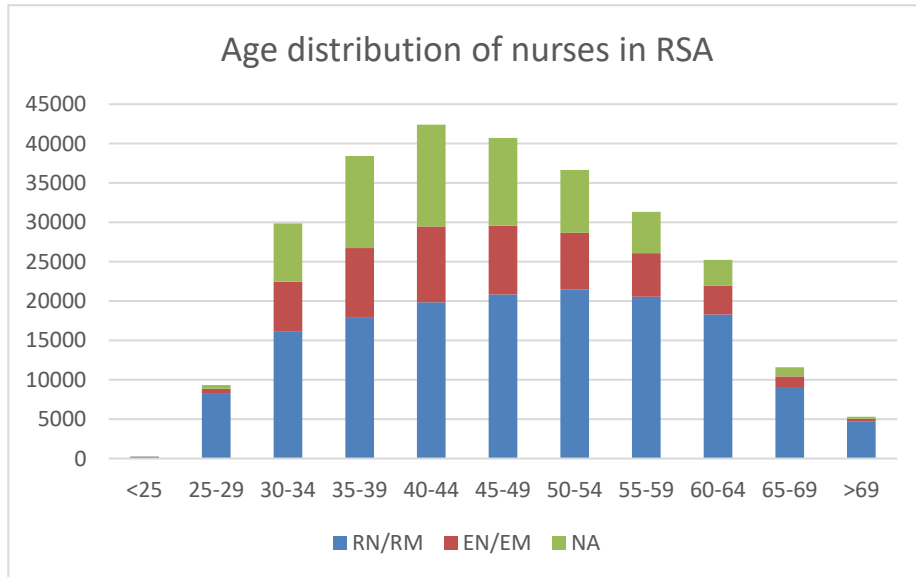
chosen to train more nursing auxiliaries than all the degree and diploma students put together. Gauteng, KwaZulu Natal and Mpumalanga have opted not to train any nursing auxiliaries, despite having a ratio of less than 50% of sub-category nurses to professional nurses.

The number of training places are determined by the SA Nursing Council who purport to base this determination on the capacity available at the individual nursing education institutions, but it is not clear how this determination is made. It is interesting to note that formerly, many nursing education institutions were permitted larger intakes of diploma and certificate students than currently allowed. This may be due to reduced capacity of the institutions or the perceived difficulty in presenting higher education programmes, but this has not been explained by the statutory body.

#### 4. The Future Outlook

In determining scenarios based on the data presented thus far, certain assumptions have to be made as it is not known how many nurses on the Council registers are in active nursing practice. The South Africa Nursing Workforce Planning document (HASA and NDOH, 2021) suggested that 66% are working in the health sector but as this is an estimate, we first calculated the data in this section assuming that all are in active practice. This clearly presents a somewhat optimistic estimation. In Figure 2, however, we have made a projection based on the HASA/NDOH estimation. While the ages of nurses on the register are known and therefore the approximate retirement age, it is not known how many will die before reaching retirement age. We do know that in 2022 two hundred and sixty-one (261) nurses from other countries registered with SANC, and only forty-one (41) were removed due to death, a further twenty-two (22) at their own request, eleven (11) as a disciplinary measure and there were fourteen (14) administrative removals. These numbers are relatively small and have not been considered when making projections for the availability of future nurses.

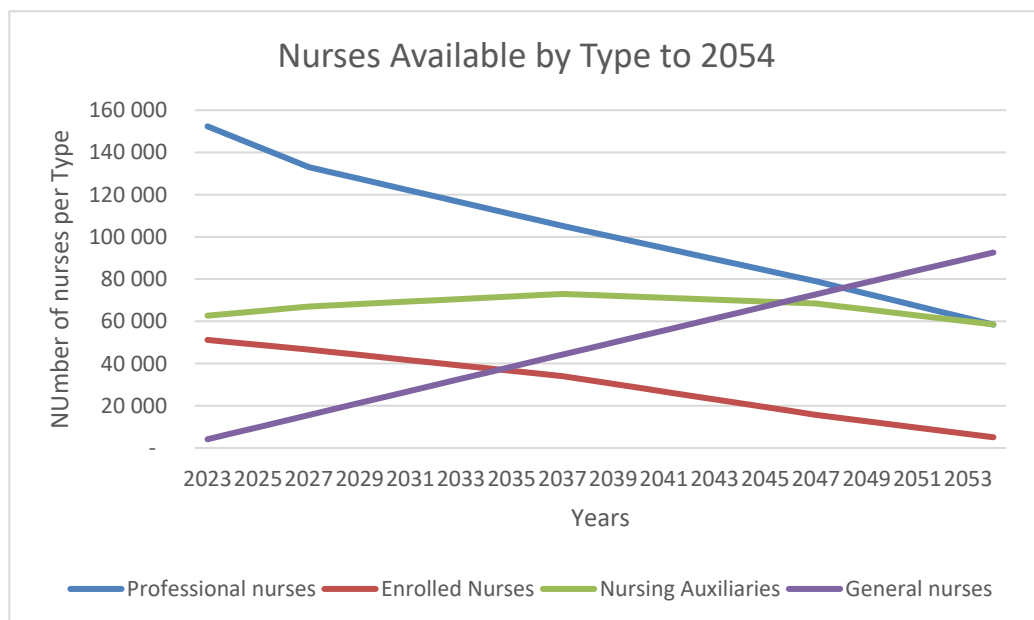
The professional nurse category is of particular concern when projecting the availability of nurses. Thirty-two percent (32%) of professional nurses are already over the age of 59 and are therefore likely to retire within the next ten years 8.7% are over the age of 64 so will retire in the next 5 years.



**Figure 2:** The distribution of ages of the various categories.

According to Stats SA (2022) the population of the country in 2022 was approximately 61 million, and the United Nations (UNFPA.2022) estimated that the population is currently 64 million. Stats SA has publicly stated that the last census data is inaccurate. Stats SA further predicts a population growth rate of 1,8%. This data is important as nursing numbers should grow in tune with the population.

Based on the assumptions that: no deaths, no immigration and no emigration will occur from the nursing cohort; the number of training places will remain constant at the numbers represented in Table 2; that no nurse leaves the profession except by retirement at sixty-five (65) and that all nurses entering the profession are between twenty (20) and forty (40) years of age, we made two projections – one based on the idea that all nurses on the register are working (Figure 3) and one based on the HASA, NDOH (2021) calculation that only 66% of nurses on the register are in active employment in the health services in South Africa (Figure 4).



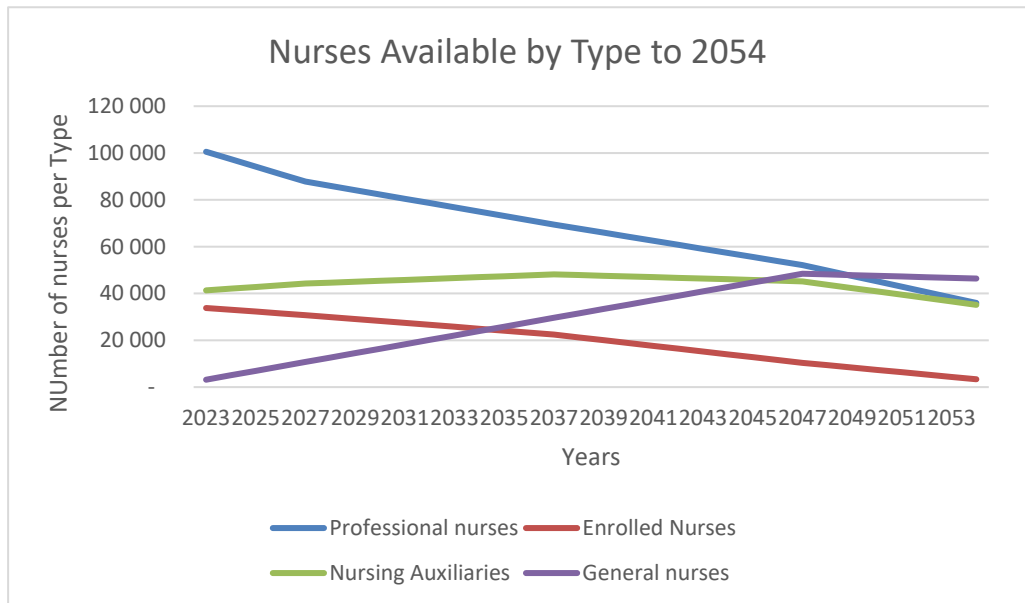
**Figure 3:** Projections of nurses per category available in next 30 years (assumption all nurses are in practice)

The enrolled nurses will gradually phase out as the register is now essentially closed to new registrations. The general nurses' category will gradually increase as more are trained on this programme and by 2048 will exceed the number of available professional nurses. The number of professional nurses will decrease by 72% in the coming thirty (30) years. The auxiliary nurses' numbers will remain relatively steady. The whole cohort of nurses (of all categories) will decrease by 25,5% during this time.

If one factors in the population growth and considers the recommended ratio of 58,64 nurses per 10 000, to meet universal health goals, the country will be short of just over 400 000 nurses by the year 2054. For those who need a shorter outlook, the country will be short of 260 458 nurses by the year 2030.

In the second projection we made, based on an estimation that only 66% of nurses on the register are in clinical practice, the situation would clearly be even more alarming as seen in Figure 4.





**Figure 4:** Projections of nurses per category available in next 30 years (assumption 66% of nurses on the register are in clinical practice)

## 5. Discussion and Recommendations

In considering the data presented and bearing in mind that, as quoted at the beginning of this article, “the health system includes inputs, processes and outputs (that are) all are dynamically inter-related” (Meyer RM, O'Brien-Pallas LL. 2010), and trying to inform decisions related to nursing education, the first consideration needs to be what we do not know. We cannot make definitive and long ranging decisions without knowing what gaps exist.

One of the most pressing needs is for an audit of nurses to establish how many of the nurses on the register are actually contributing to practice – either as clinical nurses or as educators, managers and other spheres of nursing, as opposed to remaining on the register but not working or working in sectors other than health care or working overseas, or in the possible case of some nurse managers may not have remained on the register. If the SA Nursing Council were to require this information annually when re-registering nurses, this could be done but it clearly would require SANC to improve the capacity of their database.

Knowing how many of students who begin training on the various programmes complete training, are able to complete community service, and register their qualification to go on to practice nursing is also important. Every nursing education institution has this data but having a centralized open-source database of this data is essential.

Having recently changed the scope of practice of the various categories of nurse and having introduced a new category and ceased training enrolled nurses, further estimations need to be made on the ratio of the various categories to one another. This needs a further detailed analysis of nurse patient ratios in various settings. The Workload Indicators of Staffing Need (WISN) method (WHO, 2023) has been used to do this based on “a health worker’s workload, with activity (time) standards applied for each workload component”. This system was used to calculate norms for primary health care in South Africa but, as reported by Mabunda et al (2021), the calculated norms were found to be “unaffordable”. In the unnamed province where the calculation was done, four thousand four hundred and eighteen (4418) additional posts would have had to be created in the primary health care services to meet the required norms. Regarding hospital services, Lasater et al (2021) state that the nurse: patient ratios in hospitals in the State of New York, ranged from 4.3 to 10.5 patients per nurse with an average of 6.3. per patient. Importantly they found that patient outcomes were better when ratios were more favourable and that the hospitals saved money by shortening the stay of patients, apart from the obvious benefits of better patient outcomes. Clearly the ratios need to be determined based on many factors including the acuity of the patients, but several authors (Driscoll et al, 2018; Musy et al, 2021); Twigg et al, 2021) concur with Lasater et al (2021) that patients’ outcomes are improved when ratios are more favourable.

Improving ratios means that nurses have either to be “imported” or trained. As the former is politically, and possibly ethically, unacceptable as it is viewed as “poaching” nurses from countries worse off than ours and given that our nurses are already being “poached” by more developed countries, the latter option seems the only way to go.

In 2015, the output from nursing education institutions was at its highest in many years and the number of nurses on the register, although not keeping up with the increase in population, was rising. The output that year was 22 205. The comparative breakdown of the categories is displayed in Table 3, between the 2015 figures and the available current figures.

**Table 3:** Comparison between “highest” output (2015) and current accredited training places

Category	2015 output	Category	2024 intake
Professional nurses	7654	Professional Nurse (degree programme)	1175
Enrolled nurses	8756	General Nurse (3-year diploma programme)	1976
Enrolled Nursing Auxiliaries	5795	Nursing Auxiliary 1-year Higher Certificate programme	1075
Total	22205	Total	4226

Without any of the prior discussions about unknown data and uncertain needs, it is clear from the data in Table 3 that the need to increase training places is urgent and essential. Universities must be capacitated and funded to produce more professional nurses. Nursing Colleges probably need to increase the output of general nurses at least eight-fold to make up, at least partly, for the loss of professional nurse capacity and for the fact that enrolled nurses are no longer being trained. Even the number of nursing auxiliaries needs to increase at least five-fold, and these estimations do not even take into consideration the rising population numbers.

As professional nurses are the only category currently who can specialise and the number of specialists is already too low, the need to make specialist training available to all professional nurses whether they have a midwifery qualification or not, is profoundly important. It is acknowledged that certain categories of specialist such as primary health care nurses and advanced midwives need a basic midwifery qualification, but it seems counterproductive to prevent previously trained “bridging nurses” who have no possibility of training as midwives becoming specialist nurses in fields such as intensive care.

## 6. Conclusion

Even enabling these seemingly drastic increases in nurse training will not keep up with the population growth, but it may prevent a systems collapse. That it will be costly, and that government will consider it unaffordable is highly likely. Failure to do this will mean, as Lewis Thomas, who was quoted at the beginning of the article indicated, the healthcare delivery system will not be held together and will lack the glue to hold it together and enable it to function.

Calculating training needs is complex and we have only shown the tip of the iceberg, but our intention is to issue a simple warning that we cannot wait for further studies and

calculations to be made. It is imperative that all stakeholders who influence nursing education in South Africa come together to avert this crisis.

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